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10/574,590	04/04/2006	Tetsujiro Kondo	285899US6PCT	3966
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.				EXAMINER
1940 DUKE STREET				VILLECCO, JOHN M
ALEXANDRIA, VA 22314				ART UNIT
				PAPER NUMBER
				2622
NOTIFICATION DATE	DELIVERY MODE			
01/14/2009	ELECTRONIC			

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/574,590	<b>Applicant(s)</b> KONDO ET AL.
	<b>Examiner</b> JOHN M. VILLECCO	<b>Art Unit</b> 2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 04 April 2006.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-33 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-5,12-20 and 31-33 is/are rejected.  
 7) Claim(s) 6-11 and 21-30 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 04 April 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-2, 14, 16-20, 32, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Rosenthal et al. (U.S. Patent No. 6,985,294).**

5. Regarding *claim 1*, Rosenthal discloses a color projector for displaying a full spectrum image. Additionally, Rosenthal discloses that application 10/798,159 (now patent number 7,437,000, hereinafter referred to as the '000 patent), which is incorporated by reference, includes the capture of a full spectrum image. More specifically and as it relates to the

applicant's claims, Rosenthal discloses a first dividing means (diffraction grating, 14 of the '000 patent) for dividing an optical image of an object into a spectrum, and a detecting means (photosensitive line array, 16 of the '000 patent) for detecting the spectrum obtained by the first dividing means (diffraction grating, 14 of the '000 patent) and outputting image data based on the detected spectrum. See column 2, lines 29-50 and column 3, lines 8-33 of the '000 patent. Furthermore, Rosenthal discloses a second dividing means (diffraction grating, 5) for dividing white light (col. 3, lines 63-67) into a spectrum (col. 5, lines 16-25), extracting means (digital micro-mirror modulator array, 6) for extracting from the spectrum of white light divided into the spectrum by the second dividing means (diffraction grating, 5), spectrum portions based on image data (col. 5, line 37 to column 6, line 9), synthesizing means (also the digital micromirror modulator array, 6) for synthesizing the spectrum portions extracted by the extracting means, and a projecting means (scanning front surface mirror, 10) for projecting light formed by synthesizing the spectrum portions by the synthesizing means.

6. *Claim 2* is considered a method claim corresponding to claim 1. Please see the discussion of claim 1 above.

7. As for *claim 14*, Rosenthal discloses a color projector for displaying a full spectrum image. More specifically and as it relates to the applicant's claims, Rosenthal discloses a dividing means (diffraction grating, 5) for dividing white light (col. 3, lines 63-67) into a spectrum (col. 5, lines 16-25), obtaining means for obtaining image data based on a spectrum of an optical image of an object (col. 5, lines 59-62 discloses receiving an input image and processing for display; furthermore, the '000 patent, which is incorporated by reference, teaches outputting spectrum image data to a PC, which, in turn, process the received data for display, see

column 3, lines 7-34 of the '000 patent), extracting means (digital micro-mirror modulator array, 6) for extracting from the spectrum of white light divided into the spectrum by the second dividing means (diffraction grating, 5), spectrum portions based on image data (col. 5, line 37 to column 6, line 9), synthesizing means (also the digital micromirror modulator array, 6) for synthesizing the spectrum portions extracted by the extracting means, a projecting means (lens, 9) for projecting light formed by synthesizing the spectrum portions by the synthesizing means, and an adjusting means (scanning front surface mirror, 10) for adjusting a position of projection by the projection means.

8. With regard to *claim 16*, Rosenthal discloses that the extracting means includes at least one reflector (the extracting means is a digital micromirror modulator array, 6, which is a reflector), the number of the micromirrors is in correspondence with the number of pixels forming one line in a direction parallel with a line of the optical image of the object and in correspondence with the number of spectrum portions of the optical image of the object for one pixel in a direction perpendicular to the line, the at least one reflector controlling reflection of the spectrum of white light on the basis of the image data (see column 5, lines 36-65).

9. Regarding *claim 17*, Rosenthal discloses that the reflector is a micromirror. See column 5, lines 16-26.

10. As for *claim 18*, since the claim language of claim 16, from which claim 18 depends, states that the extracting means can be a reflector OR a transmission unit, either one can be found and still meet the claim language. Therefore, since Rosenthal discloses a reflecting means, the transmission unit limitations do not have to be met.

11. With regard to *claim 19*, Rosenthal discloses that a line of image data is projected and then the scanning mirror (10) is moved to the next line. Therefore, the Examiner is interpreting the projecting of the line image data as a first period and the movement though the image to the last line as the second period. See column 6, lines 10-35.
12. Regarding *claim 20*, as described above the first period would be the horizontal scanning period and the second period would be the vertical scanning period.
13. *Claim 32* is considered a method claim corresponding to claim 14. Please see the discussion of claim 14 on the preceding pages.
14. *Claim 33* is considered to be substantively equivalent to claim 1. Please see the discussion of claim 1 on the preceding pages.

**15. Claims 3, 4, 12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Rosenthal et al. (U.S. Patent No. 7,437,000).**

16. Regarding *claim 3*, Rosenthal discloses a full spectrum color detecting pixel camera. More specifically and as it relates to the applicant's claims, Rosenthal discloses a dividing means (diffraction grating, 14) for dividing an optical image of an object into a spectrum, and a detecting means (photosensitive line array, 16) for detecting the spectrum obtained by the dividing means (diffraction grating, 14) and outputting a pixel of image data based on the detected spectrum. See column 2, lines 29-50 and column 3, lines 8-33.
17. As for *claim 4*, Rosenthal discloses a separating means (slit, 13) for separating one line of light (line of light from one pixel) forming the optical image of the object and supplying the separated one line of light to the dividing means (diffraction grating, 14), focusing means (lens

12) for focusing the optical image of the object onto the detecting means (photosensitive line array, 16), wherein the detecting means (photosensitive line array, 12) includes a plurality of photoelectric sensors (element, 21; Figure 2) disposed in a plane for detecting the strength of the light, each photoelectric sensor detecting a spectral component of each pixel of the one line of light. See column 2, lines 28-64.

18. With regard to *claim 12*, Rosenthal discloses that the sum of the pixel color elements and irradiance represents the spectral signature. The spectrophotometer (34) determines the representation of the pixels. See column 3, lines 7-33.

19. *Claim 13* is a method claim corresponding to claim 3. Please see the discussion of claim 3 on the preceding pages.

***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. **Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal et al. (U.S. Patent No. 7,437,000).**

22. Regarding *claim 5*, as mentioned above in the discussion of claim 4, Rosenthal discloses all of the limitations of the parent claim. Rosenthal, however, fails to disclose that the photoelectric sensors are electron shock CCD's. Official Notice is taken as to the fact that it is well known in the art to use electron shock CCD's, more commonly referred to as intensified

CCD's or ICCD's, in order to capture spectral images. ICCD's perform extremely well in low light conditions, have a wide spectral response, and very fast frame rates. Therefore, it would have been obvious to one of ordinary skill in the art to use ICCD's in the device of Rosenthal, since Rosenthal is concerned with capturing images of a spectrum.

23. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal et al. (U.S. Patent No. 6,985,294).

24. Regarding *claim 15*, as mentioned above in the discussion of claim 14, Rosenthal discloses all of the limitations of the parent claim. Rosenthal, however, fails to explicitly disclose that the adjusting means (scanning mirror, 10) is a galvano-mirror or a polygon mirror. Official Notice is taken as to the fact that it is well known to use both galvano-mirrors and polygon mirrors as scanning mirrors in projecting systems. Such devices are commonplace and one could easily have used either in the device of Rosenthal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the scanning mirror of Rosenthal a galvano-mirror or a polygon mirror.

25. As for *claim 31*, as mentioned above in the discussion of claim 14, Rosenthal discloses all of the limitations of the parent claim. Rosenthal, however, fails to explicitly disclose a cylindrical screen for projecting thereon the light formed by synthesizing the spectrum portions. Official Notice is taken as to the fact that it is well known to use a cylindrical screen for projecting image data thereon.

**26. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal et al. (U.S. Patent No. 6,985,294) in view of Raskar et al. (U.S. Patent No. 6,715,888).**

27. As for *claim 31*, as mentioned above in the discussion of claim 14, Rosenthal discloses all of the limitations of the parent claim. Rosenthal, however, fails to explicitly disclose a cylindrical screen for projecting thereon the light formed by synthesizing the spectrum portions. Raskar, on the other hand, discloses that it is well known in the art to project images onto a cylindrical screen. More specifically Raskar discloses that images can be projected onto a cylindrical column. See column 14, lines 32-38. Such a design allows for image to be projected onto a number of different surfaces without distortion. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to project the images from Rosenthal onto a cylindrical screen so that images can be projected without distortion onto various surfaces.

*Allowable Subject Matter*

28. Claims 6-11 and 21-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 6, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest that the separating means includes a slit and an adjusting means, the adjusting means adjusting the position where the optical image of the object is incident upon the slit.

As for claim 21 and 30, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest that the synthesizing means includes a synthesizing prism for synthesizing the spectrum portions extracted by the extracting means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN M. VILLECCO whose telephone number is (571)272-7319. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN M. VILLECCO/  
Primary Examiner, Art Unit 2622  
January 7, 2009